# 1.0 INTRODUCTION

Presented herein is the Draft Final Remedial Investigation (RI) Report for the Magna Metals Site, Town of Cortlandt, New York. The RI media of concern have been soils, sediments, surface water, and groundwater. This document has been prepared for ISC Properties, Inc. (ISCP) and incorporates the previous RI reports submitted by ISCP to the New York State Department of Environmental Conservation (NYSDEC) which include the November 1998 RI/FS, August 2004 Draft Supplemental RI, and the June 2006 Data Findings From the Additional Data Collection Activities, June 2006. For completeness, this report also includes a brief summary of soil gas and indoor air investigation activity performed in 2007.

## 1.1 Purpose and Objective

The purpose of the this Draft Final RI/FS is to capture in a single document, the extensive studies performed over multiple RI sampling events, which document the horizontal and vertical delineation of soil and water contamination at the site and provide a comprehensive set of RI data for development of the Final Feasibility Study so that remedial action can be conducted at the site. A Feasibility Study was previously submitted (i.e., RI/FS November 1998). Due to subsequent additional delineation work performed, the parameters of the Feasibility Study considerations require modification; specifically, the scope of soils to be remediated in and around the leach pit area, and in the wetland sediments adjacent to the site. Secondly, treatment considerations for groundwater have significantly changed since 1998. With NYSDEC concurrence on RI completion, submittal of the FS is planned for the Fall of 2007.

## 1.2 Site Background

Minimal information regarding past practices exists. Metal plating, polishing, and lacquering operations were conducted at the Magna Metals Site from 1955 to 1979. During operation, it was reported that iron, lead, copper, nickel, and zinc chlorides, cyanides, and sulfates were discharged to a series of leaching pits.

### 1.2.1 Site Location and Description

The Magna Metals Site is located in the Town of Cortlandt, Westchester County, New York, near the intersection of Furnace Dock Road and Maple Avenue. Nearby towns include Peekskill, two miles northeast, and Croton-on-Hudson, five miles southwest (see Figure 1-1 Site Location Map). The Hudson River is located three miles west of the site. Locally, the site is part of a larger commercial property owned by Baker Properties. Baker Properties acquired the property from ISCP in 1982, and has leased it to various tenants. The identity of these tenants and their use of the property has varied over time. Residential areas are located around the facility. A wetland area stream and pond are located near the site.

### 1.2.2 WCHD Department of Health and NYSDEC Sampling History

A water pollution investigation was performed in October 1978 by the Westchester County Health Department (WCHD). Minimal information exists with respect to actual locations of samples. However, number of samples and reported values are known. Five standing water/wastewater samples were collected on October 3, 1978 and analyzed for pH, iron, copper,

zinc, cadmium, chromium, cyanide, lead, manganese, and nickel. Concentrations of iron, copper, zinc, chromium, cyanide, and nickel exceeded groundwater standards. Lead concentrations also exceeded groundwater standards in one sample; however, the detection limit used in the lead analysis was higher than the groundwater standard. Results of this sampling event are shown in Table 1-1. Soil and bottom sediment samples were collected on the site and upstream and downstream of the site at unknown locations, respectively, on October 13, 1978. These samples were analyzed for the same parameters as the water samples collected earlier in the month. Copper and zinc were the only metals present at concentrations above the common range maximum for native soils and/or the oral exposure health-based criteria. These metals were found in the two soil samples downslope of the wastewater overflow, or effluent from the site. The results from this sampling event are presented in Table 1-2.

WCHD returned to the site on December 15, 1978, with personnel from the NYSDEC. At this time, five core samples were collected from the sewage overflow area (exact location unknown), and the analytical results of this sampling are shown in Table 1-3. These samples were analyzed for iron, copper, zinc, chromium, and manganese. Copper concentrations exceeded the common range maximum for native soils in two samples. Zinc concentrations were also above the common range maximum for native soils in two samples.

On August 19, 1982, leaching pit samples were collected for analyses of selected trace metals, cyanide, chlorides, phenolics, sulfates, and nitrates by General Testing Corporation (see Table 1-4). The specific leach pits sampled are unknown. The results of an EP toxicity analysis for four samples indicated no apparent metal leaching problems. Sulfates, nitrates and chlorides were present at concentrations less than their New York State (NYS) Ambient Water Quality Standards of 250, 10 and 250 mg/l, respectively (NYSDEC, 1991). In addition, these inorganics generally have low toxicity and are present as background constituents.

In 1982, NYSDEC determined that hazardous wastes disposed of at the site did not constitute a significant threat to the environment. Accordingly, no remedial action was required and the site classification was changed to Code "F".

The NYSDEC collected four samples (locations unknown) on November 16, 1982, for EP toxicity analysis by RECRA Environmental Laboratory. The results for this 1982 sampling event are also shown in Table 1-4.

On December 29, 1982; February 1 and 2, 1983; and March 15, 1983, the WCHD conducted additional water pollution investigations on the site property and in Furnace Brook immediately to the west of the property. The results for the February and March 1983 sampling events are displayed in Tables 1-5, 1-6 and 1-7. Except for aesthetic considerations of iron and manganese concentrations, trace metals were not found to be elevated in the surface waters (i.e., when compared to NYS Ambient Water Quality Standards). However, as shown in Tables 1-6 and 1-7, several chlorinated volatile organics were detected in Furnace Brook. Of concern were the levels of trichloroethene (TCE) detected in the samples from the septic tank, from the leaching pit off the septic tank, and from the downstream sample locations along Furnace Brook and the unnamed tributary.

On May 15, 1984, the NYSDEC Division of Environmental Enforcement sampled at the site for metals and volatile organic compounds. Water samples were also analyzed for pesticides and PCBs. Surface water samples were collected from locations along Furnace Brook/tributary, from the septic tank, and from leaching pit A. Four sediment and two sludge samples were also collected at this time, from the Brook/tributary and from leaching pits. The sample results are summarized in Tables 1-8, 1-9, and 1-10 for metals, and in Tables 1-11 and 1-12 for volatile organics.

Analyses conducted in 1984 for 12 of the 13 priority pollutant metals analyzed in the surface water samples consistently resulted in low concentrations (i.e., generally less than detection limits). Water samples from the septic tank (sample 05) and leaching pit (sample 08) contained elevated concentrations of arsenic, selenium, copper, nickel, and zinc. Trace metals in sediment samples indicated similar trends, i.e., the 12 priority pollutants were essentially present at background levels; copper was slightly elevated. Sludge samples collected from leaching pits 4 (sample 06) and 2 (sample 07); however, contained elevated arsenic, selenium, cadmium, chromium, copper, nickel, silver, and zinc. Pesticides and PCBs were not detected in any of the water samples. EP Toxicity tests for the two sludge samples (Table 1-10) resulted in concentrations below the allowable maximum EP toxicity concentration and generally less than detection limits.

The results for the volatile organic analyses of the May 15, 1984 NYSDEC water samples indicated elevated trichloroethene levels in the septic tank (15,000 ppb) and in leaching pit 4 (190 ppb). Trans-1,2-dichloroethene was also detected in the surface water samples, with concentrations in the downstream and in the septic tank samples (see Table 1-11). Sediment and sludge samples contained detectable concentrations of six volatile organic compounds. Acetone, trans-1,2-dichloroethene, trichloroethene, and vinyl chloride were present in the brook sediments, while trichloroethene, xylenes, and ethylbenzene were detected in the sludge samples collected from leaching pits; see Table 1-12.

NYSDEC had determined that ISCP was the responsible party for operation at the Magna Metals facility. ISCP developed and submitted a RI/FS Work Plan in August of 1995. ISCP entered into an order on consent with the NYSDEC in May 1996, thereby initiating RI/FS activities.

## 1.3 RI Activity Chronological Summary

Extensive RI studies have been performed on the former Magna Metals Site. During the course of the RI/FS study, data gaps were identified by ISCP's consultant and NYSDEC in the 1998 and 2004 reports which required additional RI activity. Below is a chronological summary of the RI activities, including comment, response, plan and report submittals, and field work.

| Activity | Approximate Date |
|---|---|
| RI/FS Work Plan Submitted | August, 1995 |
| Order on Consent | May, 1996 |
| RI/FS Field Investigation Activities | September 1996 to May 1998 |
| RI/FS Report Submitted | November 1998 |
| NYSDEC RI/FS Comments | July 1999 |
| Response to RI/FS Comments | August 1999 |
| NYSDEC Additional RI/FS Comments | January 2000 |
| NYSDEC Soils RI Approval | January 2000 |
| Response to NYSDEC Comment 1/00 | February 2000 |
| NYSDEC RI/FS Disapproval | March 2001 |
| Draft Supplemental RI Work Plan Submitted | December 2001 |
| NYSDEC Comments | April 2002 |
| NYSDEC Additional Historic Documentation Turnover | September 2002 |
| NYSDEC Comments Addendum | September 2002 |
| Response Letter | October 2002 |
| Revised Supplemental Work Plan Submitted | November 2002 |
| NYSDEC Comments | December 2002 |
| Supplemental Work Plan Re-submitted | January 2003 |
| NYSDEC Comments | February 2003 |
| Supplemental Work Plan Re-submitted | March 2003 |
| NYSDEC Approval Supplemental RI Work Plan | April 2003 |
| Supplemental RI Field Activity | Jul 2003-April 2004 |
| Draft Supplemental RI Report Submitted | August 2004 |
| NYSDEC Draft Supplemental RI Comment Letter | April 2005 |
| Response to Supplemental Draft RI Comments | June 2005 |
| ISCP/NYSDEC/DOH Site Visit | August 2005 |
| Draft Additional Data Collection Work Plan Submitted | September 2005 |
| Draft Final Submitted | October 2005 |
| NYSDEC Approval Additional Data Collection Work Plan | November 2005 |
| Additional Data Collection Field Activity | January–February 2006 |
| Additional Data Collection Findings Report Submitted | June 2006 |
| NYSDEC Comments | November 2006 |
| Indoor Air and Sub Slab Work Plan Submitted* | February 2007 |
| Indoor Air and Sub Slab Field Activity* | March-April 2007 |
| Draft Indoor Air Report Submitted* | July 2007 |
| Draft Final RI Submitted | August 2007 |

* Subslab Vapor and Indoor Air Quality Work and Reporting submitted under separate cover by AKRF July 2007.

**Table 1-1**

**Westchester County Department of Health**
**Water Pollution Investigation on 10/3/78**

Concentrations presented in ug/L.

| Parameter | Groundwater Standards | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| pH | -- | 10.9 | 10.3 | 11.3 | 9.5 | 7.8 |
| Iron | 300 | 10,000 | 5,900 | 9,300 | 4,000 | 3,800 |
| Copper | 200 | 150,000 | 320,000 | 170,000 | 87,000 | 76,000 |
| Zinc | 300 | 49,000 | 18,000 | 46,000 | 10,000 | 8,900 |
| Cadmium | 10 | (5) | (5) | (5) | (5) | (5) |
| Chromium | 50 | 2,800 | 3,600 | 3,100 | (30) | (30) |
| Cyanide | 100 | 1,700,000 | 640,000 | 2,700,000 | 210,000 | 170,000 |
| Lead | 25 | (30) | (30) | (30) | (30) | 60 |
| Manganese | | 120 | 110 | 120 | 90 | 110 |
| Nickel | 700 | 66,000 | 33,000 | 93,000 | 18,000 | 10,000 |

NOTES:
(#) Concentration less than detection limit shown in parentheses.

| SAMPLE | LOCATION |
|---|---|
| 1 | Ponded liquid near 1st leaching pit. |
| 2 | Influent wastewater to industrial disposal system. |
| 3 | Overflow or effluent from industrial disposal system. |
| 4 | Influent wastewater. |
| 5 | Overflow or effluent wastewater. |

## Table 1-2

### Metals Analyses from Westchester County Department of Health Water Pollution Investigation Soils and Bottom Sediment Sampling on 10/13/78

Concentrations presented in mg/kg.

| Parameter | Common Range in Soil | Oral Exposure Health-Based Criteria | A | B | 1 | 2 | 3 |
|---|---|---|---|---|---|---|---|
| Iron | 5,000-50,000 | | 70 | 160 | 110 | 640 | 330 |
| Copper | 1-100 | | 2.3 | 13 | 60 | 270 | 115 |
| Zinc | 10-300 | | 2.9 | 95 | 240 | 980 | 320 |
| Cadmium | 0.01-0.7 | | (0.2) | (0.2) | 0.2 | 0.7 | 0.4 |
| Chromium | 1-1000 | | 0.2 | 0.6 | 23 | 24 | 7.7 |
| Cyanide | | 300 | 0.7 | 9.2 | 38 | 14 | 20 |
| Lead | 2-200 | | (1.2) | (1.2) | 5.8 | 3.3 | (1.2) |
| Manganese | 200-10,000 | | 78 | 70 | 46 | 67 | 115 |
| Nickel | 5-500 | 300 | 15 | 35 | 75 | 31 | 80 |

NOTES:
(#) Concentration less than detection limit shown in parenthesis.

| SAMPLE | LOCATION |
|---|---|
| A | 100 yards upstream of Magna Metals building. |
| B | 300 yards downstream of Magna Metals building in pond. |
| 1 | Base of slope. |
| 2 | 150 feet from overflow site. |
| 3 | 250 feet from overflow site. |

**Table 1-3**

**Metal Analyses from Westchester County Department of Health and New York State Department of Environmental Conservation Core Sampling Below (West of) Former Outflow/Overflow Area (Last Leaching Pit) on 12/15/78**

Concentrations presented in mg/kg.

| Parameter | Common Range in Soil | Core 1A | Core 1B | Core 1C | Core 2A | Core 2B | Core 3A | Core 3B |
|---|---|---|---|---|---|---|---|---|
| Iron | 5,000-50,000 | 1,200 | 230 | 680 | 1,320 | 170 | 700 | 70 |
| Copper | 1-100 | 520 | 30 | 160 | 100 | 10 | 60 | 10 |
| Zinc | 10-300 | 300 | 6 | 70 | 1,500 | 10 | 630 | 20 |
| Chromium | 1-1,000 | 10 | 0.6 | 3 | 25 | 0.6 | 10 | 1 |
| Manganese | 200-10,000 | 40 | 20 | 20 | 140 | 25 | 90 | 10 |

| SAMPLE | LOCATION |
|---|---|
| Core 1A | Top inch |
| Core 1B | 6"-7" |
| Core 1C | 9"-10" |
| Core 2A | Top inch |
| Core 2B | 7"-8" |
| Core 3A | Top inch |
| Core 3B | 6"-7" |

## Table 1-4

### New York State Department of Environmental Conservation
### EP Toxicity Extracts Taken on 8/19/82 and 11/16/82, Respectively

Concentrations presented in mg/L.

| Parameter | TCL | Pit A | Pit 1 | Pit 2 | Pit 4 | Pit 5 | R001201 | R001202 | R001203EX | R001203 |
|---|---|---|---|---|---|---|---|---|---|---|
| pH | | 7.9 | 9.4 | 8.2 | 6.4 | 6.9 | 8.89 | | | 7.22 |
| Iron | | 5.5 | 0.9 | (0.05) | (0.05) | 0.82 | 1.9 | | | 37,000 |
| Copper | | 3.66 | 23.9 | 176 | 38.4 | 0.60 | 16.8 | | | 490 |
| Zinc | | 50 | 0.42 | 75 | 81 | 14 | 0.60 | | | 360 |
| Cadmium | 1.0 | (0.025) | 0.03 | (0.025) | (0.025) | (0.025) | (0.004) | | (0.004) | 2.2 |
| Chromium | 5.0 | (0.05) | (0.05) | (0.05) | (0.05) | (0.05) | | | | 490 |
| Chromium, Hex | | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | 0.004 | | (0.004) | 130 |
| Cyanide | | 0.54 | 0.42 | 2.3 | 0.91 | 0.38 | | 23 | | 36 |
| Lead | 5.0 | (0.1) | (0.1) | (0.1) | (0.1) | (0.1) | 9.4 | | 0.017 | 6,500 |
| Manganese | | 3.3 | 0.04 | 1.52 | 1 .73 | 1.9 | 0.05 | | | 470 |
| Nickel | | 10.4 | 4.2 | 26.6 | 94 | 8.3 | 4.1 | | | 500 |
| Chlorides | | 4 | 62 | 44 | 9 | 3 | 42 | | 2.9 | 88 |
| Phenolics | | 0.015 | 0.009 | 0.015 | 0.010 | 0.012 | | 0.07 | | 3.1 |
| Sulfates | | (5) | 42 | 134 | 182 | (10) | 40 | | | |
| Nitrates | | 12.4 | 0.67 | 1.29 | 4.5 | 0.94 | 9.0 | | 1.3 | 1.6 |
| Arsenic | 5.0 | | | | | | 26 | | (0.005) | |
| Selenium | 1.0 | | | | | | (20) | | (0.005) | 0.085 |
| Mercury | 0.2 | | | | | | (0.9) | | (0.002) | |
| Barium | 100.0 | | | | | | 0.82 | | 1.7 | 130 |
| Silver | 5.0 | | | | | | 0.010 | | (0.004) | 0.38 |

NOTES:
(#) Concentration less than detection limit shown in parenthesis.

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| SAMPLE | LOCATION |
|---|---|
| Pit A | Manhole cover, sand |
| Pit 1 | Water only |
| Pit 2 | Soil, sludge |
| Pit 4 | Soil mix |
| Pit 5 | Sand |

NYSDEC COLLECTED

| SAMPLE | LOCATION OR DESCRIPTION |
|---|---|
| R001201 | Pit 1 Extraction |
| R001202 | Pit 1 Extraction |
| R001203 | Pit 5 Extraction |
| R001203EX | Pit 5 Extraction |

## Table 1-5

### Metals Analyses from Westchester County Health Department Water Pollution Investigation on 2/1/83 and 2/2/83

Concentrations presented in ug/L.

| | NYS AWQ Standard[1] | | 2/1/83 | | | | | 2/2/83 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Parameter | Human Health | Aquatic Life | 1 | 2 | 3 | 4 | 5 | 3 | 4A | 6 | 7 |
| Iron | 300 | 300 | 330 | 400 | 210 | 280 | 320 | 300 | 340 | 700 | 580 |
| Copper | 200 | * | 20 | (20) | (20) | (20) | (20) | 90 | 100 | ( 20) | 70 |
| Zinc | 300 | 30 | (50) | (50) | (50) | (50) | (50) | (50) | 50 | (50) | (50) |
| Cadmium | 10 | * | (2) | (2) | (2) | (2) | (2) | (2) | (2) | (2) | (2) |
| Chromium | 50 | * | (10) | (10) | (10) | (10) | 10) | (10) | (10) | (10) | (10) |
| Cyanides | 100 | * | (10) | (10) | (10) | (10) | (10) | (10) | (10) | (10) | (10) |
| Lead | 50 | * | (10) | (10) | (10) | (10) | (10) | (10) | (10) | (10) | (10) |
| Manganese | 300 | - | 80 | 60 | 50 | 60 | 80 | 70 | 30 | 52 | 70 |
| Nickel | - | 5.2 | (10) | (10) | (10) | (10) | (10) | (10) | (10) | (10) | (10) |

NOTES:

[1] Human health-based and aquatic life-based New York State (NYS) Ambient Water Quality (AWQ) Standards for surface water (fresh).

* Aquatic life-based NYS AWQ Standard or Guidance Value is dependent on water hardness.

(#) Concentration less than detection limit shown in parentheses.

| SAMPLE | LOCATION OR DESCRIPTION |
|---|---|
| 1 | Maple Ave. |
| 2 | Field pond outlet. |
| 3 | 100' above field pond. |
| 4 | Where Furnace Brook and brooklet meet. |
| 4A | In brooklet southwest of pits. |
| 5 | Along brooklet 30' from where Furnace Brook and brooklet meet. |
| 6 | Tributary behind Magna Metals building. |
| 7 | Furnace brook above all Magna Metals Site drainage. |

## Table 1-6

### Volatile Organic Analyses from Westchester County Health Department Water Pollution Investigation on 2/1/83 and 2/2/83

Concentrations presented in ug/L.

| Parameter | Groundwater Standards | 2/1/83 | | | | | 2/2/83 | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 3 | 4A | 6 | 7 |
| Trichloroethene | 5 | 7 | 90 | 50 | 30 | (1) | 130 | 65 | 11 | (1) |
| cis-1,2-Dichloroethene | 5 | 1.5 | 20 | 8 | 7 | (1) | 15 | 7 | 4 | (1) |
| 1,1,1-Trichloroethane | 5 | (1) | (1) | (1) | 1.0 | (1) | 43 | (1) | (1) | (1) |

NOTES:
(#) Concentration less than detection limit shown in parentheses

| SAMPLE | LOCATION OR DESCRIPTION |
|---|---|
| 1 | Maple Ave. |
| 2 | Field pond outlet. |
| 3 | 100' Above field pond. |
| 4 | Where Furnace Brook & brooklet meet. |
| 4A | In brooklet southwest of pits. |
| 5 | Along brooklet 30' from where brook & brooklet meet. |
| 6 | Tributary behind Magna Metals building. |
| 7 | Furnace Brook above all Magna Metals Site drainage. |

## Table 1-7

### Volatile Analyses from Westchester County Health Department Water Pollution Investigation on 3/15/83

Concentrations presented in ug/l, except for Sample P2 and Health Based Criteria presented in mg/kg.

| Parameter | Groundwater Standard | 2 | 3 | 4 | 4A | 4B | 8 | 10 | ST | 11 | P2 (mg/kg) | Health Based Criteria (mg/kg) (Sample P2 only) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Trichloroethene | 5 | 32 | 10.5 | 1.9 | 31 | 1.4 | (1) | 8.8 | 1,400 | (1) | 110 | 32 |
| cis-1,2-Dichloroethene | 5 | 12 | 13 | 1.1 | 3.1 | (1) | (1) | 3 | (1) | (1) | | |
| 1,1,1 Trichloroethane | 5 | (1) | (1) | (1) | (1) | (1) | (1) | (1) | (1) | (1) | 110 | 61 |

NOTES:
(#) Concentration less than detection limit shown in parentheses.

| SAMPLE | LOCATION OR DESCRIPTION |
|---|---|
| 2 | Field pond outlet. |
| 3 | 100' above field pond. |
| 4 | Where Furnace Brook & brooklet meet. |
| 4A | In brooklet southwest of pits. |
| 4B | 200' above #4. |
| 8 | Well supply house, #480 Furnace Dock Road. |
| 10 | Pond off Maple Ave. |
| 11 | Drainage Channel in front of #480. |
| ST | Septic Tank. |
| P2 | Soil-Leachate Pit 2. |

## Table 1-8

## Summary of Total Metal Analyses from NYSDEC Surface Water Sampling on 5/15/84

Concentrations presented in ug/L.

| | NYS AWQ Standard [1] | | Sample No. | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Parameter | Human Health | Aquatic Life | 01 | 02 | 03 | 04 | 05 | 08 | Detection Limit |
| pH | | | | 5 | 5-6 | 5 | 6-7 | 6 | |
| Arsenic | 50 | 190 | (10) | (10) | (10) | (10) | 550 | (10) | 10 |
| Antimony | 3[2] | - | (10) | (10) | (10) | (10) | (10) | (10) | 10 |
| Selenium | 10 | 1.0 | (10) | (10) | (10) | (10) | 237 | 91 | 10 |
| Thallium | 4[2] | 8 | (10) | (10) | (10) | (10) | (10) | (10) | 10 |
| Mercury | 2 | 0.2[2] | (0.4) | (0.2) | (0.2) | (0.4) | (0.2) | 0.2 | 0.2-0.4 |
| Beryllium | 3[3] | 11 or 1,100 | (1) | (1) | (1) | (1) | (1) | (1) | 1 |
| Cadmium | 10 | * | (10) | (10) | (10) | 11 | (10) | (10) | 10 |
| Chromium | 50 | * | (4) | (4) | (4) | (4) | 4.2 | 4 | 4 |
| Copper | 200 | * | (4) | (4) | (4) | 6.9[b] | 7,810[b] | 670[b] | 4 |
| Nickel | - | * | (15) | (15) | (15) | (15) | 610 | 508 | 15 |
| Silver | 50 | 0.1 | (3) | (3) | (3) | (3) | (3) | (3) | 3 |
| Zinc | 300 | 30 | 21[b] | (10)[b] | (10[b]) | 17[b] | 261 | 1,570[b] | 10 |

NOTES:

[b] Blank corrected.

1 Human health-based and aquatic life-based NYS Ambient Water Quality (AWQ) Standards are for surface water (fresh).

2 Guidance Value.

* Aquatic life-based AWQ Standard or Guidance Value is dependent on water hardness.

(#) Concentration less than detection limit shown in parentheses.

| SAMPLE | LOCATION OR DESCRIPTION |
|---|---|
| 01 | Upstream, north of Magna Metals. |
| 02 | Mid-stream, west of Magna Metals. |
| 03 | Marsh area southwest. |
| 04 | Downstream southwest. |
| 05 | Distribution tank adjacent to building. |
| 08 | Leaching Pit A. |

## Table 1-9

## Summary of Total Metal Analyses from NYSDEC Sediment/Sludge Sampling on 5/15/84

Concentrations presented in mg/kg.

| Parameter [1] | Global Median Soil Concentration [2] | Detection Limit | 01 | 02 | 03 | 04 | 06 (Sludge) | 07 (Sludge) |
|---|---|---|---|---|---|---|---|---|
| Arsenic | 6 | 0.5 | (0.5) | 0.65 | (0.5) | (0.5) | 27.5 | 5.0 |
| Antimony | 1 | 0.5 | (0.5) | (0.5) | (0.5) | (0.5) | (0.5) | (0.5) |
| Selenium | 0.4 | 0.5 | (0.5) | 1.8 | 0.61 | (0.5) | 7.55 | 13.0 |
| Thallium | 0.2 | 0.5 | (0.5) | (0.5) | (0.5) | (0.5) | (0.5) | (0.5) |
| Mercury | 0.06 | 0.1 | (0.1) | (0.1) | (0.1) | (0.1) | (0.1) | (0.1) |
| Beryllium | 0.3 | 0.1 | (0.1) | (0.1) | (0.1) | (0.1) | (0.1) | (0.1) |
| Cadmium | 0.35 | 1.0 | (1) | ( 1) | 1.2 | (1) | 3.1 | 1.6 |
| Chromium | 70 | 0.4 | 7.5 | 8.6 | 21.9 | 16.9 | 223 | 5.7 |
| Copper | 30 | 0.4 | 5.7[b] | 115 | 36.5 | 100[b] | 3,690[b] | 15,800[b] |
| Nickel | 50 | 1.5 | 30.1 | 40.3 | 56.2 | 39.8 | 27,500 | 13,800 |
| Silver | 0.05 | 0.3 | 0.30 | (0.3) | (0.3) | (0.3) | 0.81 | 0.70 |
| Zinc | 90 | 1.0 | 22.3[b] | 28.2[b] | 37.3 | 39.9 | 8,310[b] | 9,500[b] |

NOTES:

[b] Blank corrected.

1 Iron, lead, manganese, barium, chlorides, sulfates, and nitrates were not detected.

2 Bowen (1979).

(#) Concentration less than detection limit shown in parentheses.

| SAMPLE | LOCATION OR DESCRIPTION |
|---|---|
| 01 | Upstream north of Magna Metals - Sediment. |
| 02 | Mid-stream west of Magna Metals - Sediment. |
| 03 | Marsh area southwest - Sediment. |
| 04 | Downstream southwest - Sediment. |
| 06 | Leaching pit 4 - Sludge. |
| 07 | Leaching pit 2 - Sludge. |

## Table 1-10

**New York State Department of Environmental Conservation**
**Division of Environmental Enforcement**
**EP Toxicity Extracts of 5/15/84**

Concentrations presented in mg/L.

| Parameter | Detection Limit | EP Toxicity Maximum Concentration | 06 | 07 |
|---|---|---|---|---|
| Arsenic | 0.01 | 5.0 | 0.100 | 0.037 |
| Barium | 0.5 | 100.0 | (0.5) | (0.5)) |
| Cadmium | 0.1 | 1.0 | (0.1) | (0.1) |
| Chromium | 0.2 | 5.0 | (0.2) | (0.2) |
| Lead | 0.5 | 5.0 | (0.5) | (0.5) |
| Mercury | 0.002 | 0.2 | (0.002) | (0.002) |
| Selenium | 0.01 | 1.0 | 0.220 | 0.180 |
| Silver | 0.01 | 5.0 | (0.01) | (0.01) |

NOTES:
(#) Concentration less than detection limit shown in parentheses.

| SAMPLE | LOCATION OR DESCRIPTION |
|---|---|
| 06 | Leaching Pit 4 - Sludge. |
| 07 | Leaching Pit 2 - Sludge. |

## Table 1-11

### Summary of Volatile Organic Analyses from NYSDEC Surface Water Sampling on 5/15/84

Concentrations presented in ug/L.

| Parameter [1] | 01 | 02 | 03 | 04 | 05 | 08 |
|---|---|---|---|---|---|---|
| Acetone | (5) | (5) | (5) | (5) | (5) | (5) |
| trans-1,2-Dichloroethene | (5) | (5) | (5) | 25 | (5) | 16 |
| Trichloroethene | (5) | 6.6 | 16 | 62 | 15,000 | 190 |
| Vinyl chloride | (10) | (10) | (10) | (10) | (10) | (10) |
| Total xylenes | (5) | (5) | (5) | (5) | (5) | (5) |
| Ethylbenzene | (5) | (5) | (5) | (5) | (5) | (5) |

NOTES:

[1] Only those volatile compounds detected are listed.

(#) Concentration less than detection limit shown in parentheses.

| SAMPLE | LOCATION OR DESCRIPTION |
|---|---|
| 01 | Upstream north of Magna Metals. |
| 02 | Mid-stream west of Magna Metals. |
| 03 | Marsh area southwest. |
| 04 | Downstream southwest. |
| 05 | Distribution septic tank adjacent to building. |
| 08 | Leaching Pit A. |

## Table 1-12

## Summary of Volatile Organic Analyses from NYSDEC Sediment/Sludge Sampling on 5/15/84

Concentrations presented in ug/L.

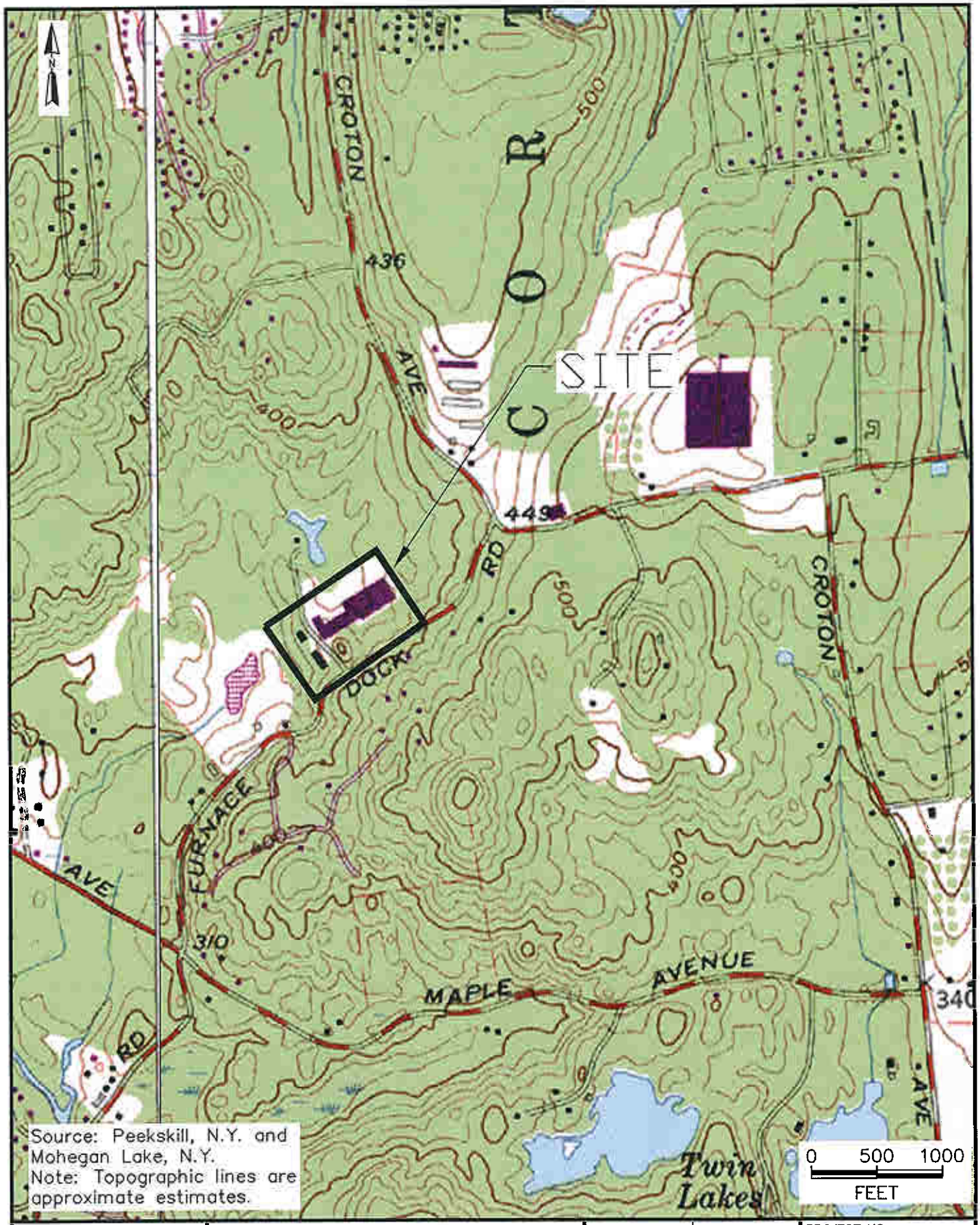
| Parameter [1] | 01 | 02 | 03 | 04 | 06 | 07 |
|---|---|---|---|---|---|---|
| Acetone | (5) | (5) | 190 | 1,400 | (5) | (5) |
| trans-1,2-Dichloroethene | (5) | (5) | 300 | (5) | (5) | (5) |
| Trichloroethene | (5) | (5) | 30 | 2,700 | 680 | 2,600 |
| Vinyl chloride | (10) | (10) | (10) | (5) | (10) | (10) |
| Total xylenes | (5) | (5) | (5) | (5) | 42 | 7,100 |
| Ethylbenzene | (5) | (5) | (5) | (5) | (5) | 3,300 |

NOTES:

[1] Only those volatile compounds detected are listed.

(#) Concentration less than detection limit shown in parentheses.

| SAMPLE | LOCATION OR DESCRIPTION |
|---|---|
| 01 | Upstream north of Magna Metals - Sediment. |
| 02 | Mid-stream west of Magna Metals - Sediment. |
| 03 | Marsh area southwest - Sediment. |
| 04 | Downstream southwest - Sediment. |
| 06 | Leaching Pit 4 - Sludge. |
| 07 | Leaching Pit 2 - Sludge. |




Source: Peekskill, N.Y. and Mohegan Lake, N.Y.
Note: Topographic lines are approximate estimates.

| | | | | |
|---|---|---|---|---|
| TETRA TECH EC, INC. | TITLE: Site Location Map<br>Magna Metals<br>Cortlandt, New York | DWN: LMB | DES.: | PROJECT NO.: 106-1172 |
| | | CHKD: | APPD: | FIGURE NO.: 1-1 |
| | | DATE: 08/22/2007 | REV.: 0 | |